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Microcomputer Selection and Uses in Beef Cattle Management

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The microcomputer is increasingly becoming an important tool for beef cattle decision makers. With appropriate software, the microcomputer can be useful for performance records, ranch accounting, ration formulation, inventory control, and economic and financial management. For profitable use of the microcomputer, consideration should be taken for defining needs, software selection, hardware selection and training. Each of these issues is briefly addressed in this publication. Other sources of information that support software use are listed at the end of this publication.

Defining Needs

Defining the potential application of microcomputers in beef cattle management should follow some awareness of its capabilities and limitations, identifying areas of potential application and then writing down the specific needs.

Capabilities

The role of the on-ranch computer is to facilitate the generation, storage and processing of data into information meaningful to the decision maker. With suitable software, the computer can accurately perform numerous complex mathematical computations at a very high speed. Such performance capabilities vastly increase a decision maker's analytical capabilities.

Many decisions can be reduced to "what if" situations where software can be used to test alternatives before taking action. Managers can do sensitivity analysis to help incorporate production and price uncertainty in decision making. This type of analysis is of particular importance to the cow-calf producer who wants to build production and marketing flexibility in his operation in order to cope with volatile prices and low rates of return.

If software is well supported by users' manuals that explain the data inputs and interpretation of the output, it can provide management education. Supporting materials will help decision makers who have to re-educate themselves on analytical tools they were exposed to in the classroom or through reading research or Extension Service reports, but never really had an opportunity to use. The software can lay out the procedures correctly and assist in the use of tools such as enterprise budgets that are not used or are not put together correctly.

Microcomputers can be used to access large computer time share systems. Data base and published information is now available on centralized computer systems. This instant information can aid in the timeliness of decisions.

The computer and software are tools to improve the managerial skills of the user. These tools should be evaluated in terms of their improvement over those presently being used.

Potential Applications

The best way to describe the potential applications of the on-ranch computer is to define and assign titles to a few of the application areas which could be useful to a manager.

A. Production Decision Aids for Nutrition
- Least-cost ration formulation for range cattle
- Supplemental feed evaluation

B. Performance Records and Evaluation
- Individual cow records
- Weaning, yearling weight adjustment and sorting
- Sire performance records and evaluation
- Record systems to facilitate breeding programs
- Gestation and management calendar
- Health management records

C. Economic Analysis
- Enterprise budgeting, breakeven analysis
- Evaluation of marketing alternatives
  - Link production and marketing
  - Commodity price charting and analysis
- Evaluation of alternative production systems
  - Grazing management combining livestock and forage
- Cow and bull replacement decisions

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- Value of a genetically superior bull
- Tax management
  - Income tax management
  - Depreciation schedules
  - Estate planning
- Price data access from national data bases

D. Accounting and Finance

- General and enterprise accounting
  - Managerial accounting
- Financial statements and ratio analysis
- Whole ranch cash flow
- Payroll

E. Range Management

- Brush control and range management systems evaluation
- Fencing cost estimates
- Range utilization record systems
- Budgeting and cash flow analysis of brush control practices
- Equipment cost estimators
- Grazing system evaluation

F. Range-Livestock Management Information Systems

- Inventory control and production calculations
- Historical production and improvements record
- Supplemental feed use data
- Stocking rate information by pasture
- Health records
- Wildlife management

G. Feedlot

- All accounting
- Production and performance reports
- Ration formulation
- Payroll
- Marketing strategy analysis
- Accessing price data bases

H. General

- Pickup and trailer cost analysis
- Word processing
- Mailing lists
- Electronic spreadsheet (for many of the applications listed above)

This list, of course, is not complete. Application of the computer is only limited by one's imagination, time and money to develop or acquire the software and knowledge to effectively utilize the tool.

Limitations

Having a microcomputer adds to the number of tools available to the decision maker. The computer and software are only tools and have *no capacity for reasoning* and no more intelligence than a pencil. One must devote time and effort to effectively utilize the computer and software in decision making.

To conclude that running data through a computer adds reliability and accuracy can be erroneous. If inputs are not reliable and accurate, the output cannot be accurate or reliable.

The GIGO, or "garbage in-garbage out," problem can be a serious limitation in effective computer use.

User-programmable software, such as Lotus 1-2-3®[1] and Super-Calc®, help overcome the user programming problem of microcomputers. This software does not eliminate the need for the proper mathematical procedure (algorithm) and data to solve the problem—a factor sometimes overlooked.

The computer, if properly utilized, complements experience, judgment and knowledge. The user must know how to use the information and cannot expect the computer to make decisions. The manager or decision maker still must direct the course of action. The computer can only help lay out the alternatives and evaluate progress.

A computer will not reduce the time spent in management activities. In most situations, computer use will increase the demands on managerial time but in much more analytical and productive activities.

Successful use of computers does require some organizational discipline. Read and follow instructions. Back-up copies of programs and data sets are essential.

Time is required for data entry. If the time or commitment is not sufficient for data entry, the computer should be limited to use as a decision tool rather than for account and record systems that require large amounts of data entry.

Technological changes of microcomputer hardware are rapid and will continue at a high rate for some time. Innovative ranchers are accustomed to high rates of technological changes for many investments that are far more expensive than microcomputer systems. They seem to be quite willing to accept obsolescence and put their tax-deductible computer investment on a short-term depreciation schedule. Profitability of the investment is the key question. Profitability directly depends on relevant software availability and how much user effort goes into making the system a profitable management tool. Although hardware changes, the software can continue to be profitable despite outdated hardware.

Identifying Specific Needs

To systematically define your specific needs, use a calendar and list decision and information needs

[1]Lotus 1-2-3 is a trademark of the Lotus Development Corporation. SuperCalc is a trademark of the Sorcim Corporation.

throughout the year. Briefly describe decisions and associated information requirements. Forget about computer software or computers in this phase of defining needs. Information needs, when and in what form, are the keys. After the list is completed, talk to other microcomputer users in similar management environments. They will help you evaluate and extend your information needs and knowledge.

Software Selection

After learning a little about microcomputers and defining needs, software selection should begin. Software selection is an increasingly difficult task because of the growing number of software packages available that accomplish similar tasks.

The surest way to select the right software for you is to spend time actually operating the program. Use an experienced computer user's program or operate a program in a demonstration environment. Agriculture software vendors will send demonstration copies of programs to interested users for a minimal cost.

One of the best reference sources for agricultural software is the Doane Western publication entitled "Agriculture Computing." The Texas Agricultural Extension Service distributes a software catalog, as do most land grant institutions.

Software vendor support varies a great deal. This is particularly critical for accounting and performance record and analysis systems. Before purchasing a package, be sure the terms of support and long-term maintenance are clear.

Most ranch computer systems include an electronic spreadsheet. This programmable software is extremely powerful. Many decision aid programs are available for the spreadsheet (called templates) and it requires a relatively small amount of time to learn to modify existing templates and create new applications. The most popular spreadsheet in agriculture is the Lotus 1-2-3® program. Spreadsheet software is available from the Texas Agricultural Extension Service for both the Lotus 1-2-3® and SuperCalc® programs.

Attending computer user training programs, reading software reviews, viewing demonstrations of software and discussing software needs with experienced computer users assist in selection of appropriate software.

It takes time to learn how to effectively utilize all software. The old saying "there is no free lunch" certainly pertains to the time required to learn to use different software. Good user manuals can help. The manual's detail and ease of use are an indicator of the software quality.

Over the normal technological life (3 to 5 years) of a microcomputer system, cost of software will normally be greater than the cost of computer hardware. Over time, hardware has decreased in cost while agricultural software has increased. This is because agricultural software is very expensive to develop, market and support (an accounting package will cost a minimum of $250,000). The agriculture market is very small compared to general business and consumer markets. Each software acquisition should be put in the same frame as other purchases. The additional revenue generated must be greater than the software cost, including the value of time required to learn how to develop the software, to make it a profitable purchase.

The Doane's *1986 Agricultural Computing Directory* summarizes eleven rules in the following order (Doane's, 1986, pp. 1-12).

1. Identify your needs first.
2. Establish software price parameters second.
3. Look for a sound reliable software manufacturer.
4. Do not buy a program with an incomplete manual.
5. Check the program for ease of installation.
6. Look for programs that are "menu driven" with help screens.
7. A program should "check" or "trap" for user errors.
8. Look for flexibility in output of information reports.
9. Check for editing and "what if" features.
10. Find out if there is a demonstration available or a money back guarantee.
11. Find out what is offered in user support, extended user support fees and training.

Hardware Selection

Review of software presently available will lead one to an IBM® or compatible microcomputer[2]. These computers have dominated the market and software vendors have followed the hardware trend. These computers operate with the MS-DOS® operating system. Mimimum random access memory (RAM) requirements are 256K, but 512K are recommended. One floppy disk is always required. The ranch computer, in addition, should have a 10 to 20 megabyte hard disk. Software needs dictate the hardware requirements and the user should see the software operate on the computer system before buying the system. Non-compatibility problems are difficult to deal with for novice operators.

Farm and ranch computer systems should have a good printer. Most users can meet their needs with a good quality dot matrix printer, but for those doing a great deal of word processing, a word quality printer may be required.

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[2]IBM is a trademark of the International Business Machine Corporation.

If it is desirable to move the computer from one working place to another, a portable computer with the features described above may be desired. If not, a desk top model will suffice.

It is highly desirable to buy a microcomputer from a local dealer who has a strong business. If any problems arise, support is readily available.

Keep aware of changes in hardware by reading farm computing publications (see list at end of publication) and discussing changes with other computer users, Extension personnel and software developers.

User Training

As microcomputer hardware has improved and software availability has increased, user knowledge and interpretation has become the most limiting factor in profitable computer use.

All software requires time to learn to utilize its unique capabilities and interpret results. Even with a good user manual, subject matter information (e.g. nutrition, financial statement evaluation criteria, etc.) is often lacking. It is advisable when purchasing software to select those packages that have service support with initial installation training. Money spent on this support is normally a good investment.

Long-term specialized training courses are especially advisable as they reduce start-up time and help increase knowledge base so software results are not misinterpreted.

The Texas Agricultural Extension Service offers special 3-day intensive short courses to meet these in-depth training needs. These courses are taught at the Stiles Farm Foundation computer training center. For information contact your county Extension agent or call (409) 845-8792 and request a brochure and registration form. The Texas Agricultural Extension Service also has training programs throughout the state organized by Extension agents and specialists.

For meaningful training on specific microcomputers, it's important to have the opportunity to actually operate the software (hands-on use). It's also important to have a specialist available who can provide subject matter information to ensure proper use of software in decision making.

Remember, the computer and accompanying software are tools designed to improve managerial skills. By carefully defining needs, selecting appropriate software and hardware, and taking advantage of user training, your investment in time and technology will pay off.

Information Sources

Doane-Western. *Agriculture Computing: The Newsletter for Microcomputer Users in Agriculture.* Doane Publishing, an Agricultural Community Service of Control Data, 11701 Boreman Drive, Suite 100, St. Louis, Mo. 63146.

Doane-Western. *Doane's 1986 Agricultural Computing Directory.* Doane Publishing, 11701 Boreman, St. Louis, Mo. 63146, (314) 569-7700. $10 per copy.

InfoWorld, the Newspaper for the Microcomputering Community. InfoWorld, 375 Cochituate Road, Framingham, Massachusetts 01701. $10 for 26 issues.

Novak, James L. and Gerald Cornforth, Editors. *Microcomputers for Farm and Ranch Management,* B-1516, Texas Agricultural Extension Service, College Station, Texas, August 1985. $5 per copy.

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Zerle L. Carpenter, Director, Texas Agricultural Extension Service, The Texas A&M University System.

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